

Resistance to Electrolysis

22 I

749. Three pairs of zinc and platina plates, fig. 54, were able to produce a current which could pass an interposed platina plate, and effect the electrolysation of water in cell iv. The current was evident, both by the continued deflection of the galvanometer, and the production of bubbles of oxygen and hydrogen at the electrodes in cell iv. Hence the accumulated surplus force of three plates of zinc, which are active in decomposing water, is more than equal, when added together, to the force with which oxygen and hydrogen are combined in water, and is sufficient to cause the separation of these elements from each other.

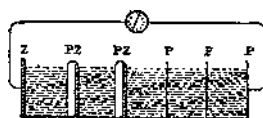


Fig. 55-

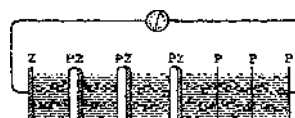


Fig. 56.

750. The three pairs of zinc and platina plates were now opposed by two intervening platina plates, fig. 55. In this case the current was stopped.

751. Four pairs of zinc and platina plates were also neutralised by two interposed platina plates, fig. 56.

752. Five pairs of zinc and platina, with two interposed platina plates, fig. 57, gave a feeble current; there was permanent deflection at the galvanometer, and decomposition in the cells vi and vn. But the current was very feeble; very

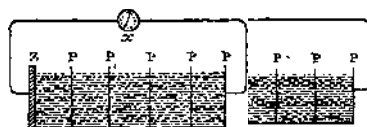


Fig. 57.

Fig. 58.

much less than when all the intermediate plates were removed and the two extreme ones only retained: for when they were placed six inches asunder in one cell, they gave a powerful current. Hence five exciting pairs, with two interposed obstructing plates, do not give a current at all comparable to that of a single unobstructed pair.

753. I have already said that a *very feeble current* passes when the series included one interposed platina and two pa